

What is claimed is:

1. In a cellular communications system in which terminals transmit information in cellular communication channels assigned from a predetermined spectrum, a cellular communications receiver comprising:

an antenna for receiving a signal spanning multiple cellular communication channels;

a downconverter coupled to the antenna for shifting the signal to an intermediate frequency; and

a channelizer coupled to the downconverter for recovering the individual cellular communication channels and outputting the individual cellular communication channels on individual recovered channel outputs.

2. The receiver of claim 1, wherein the channelizer comprises an  $n$ -point discrete Fourier transform circuit.

3. The receiver of claim 2, wherein the  $n$ -point discrete Fourier transform circuit is an  $(n-m)$  point overlapped  $n$ -point Fourier transform circuit, where  $m < n$ .

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4. The receiver of claim 2, further comprising a polyphase filter coupled to the n-point discrete Fourier transform circuit.

5. The receiver of claim 1, further comprising a recovered channel output selection circuit coupled to the individual recovered channel outputs.

6. The receiver of claim 5, wherein the recovered channel output selection circuit comprises n inputs and k outputs, where  $k < n$ .

7. The receiver of claim 1, wherein the cellular communication channels are GSM cellular communication channels.

8. The receiver of claim 1, wherein the cellular communication channels are Interim Standard cellular communication channels.

9. A channelizer for recovering communication channels, the channelizer comprising:

a resampling filter comprising an input data rate input coupled to resampling circuitry, and an output data rate output coupled to the resampling circuitry;

a discrete Fourier transform (DFT) circuit coupled to the output data rate output; and

a plurality of individual recovered channel outputs coupled to the DFT circuit,

wherein the second data rate is commensurate with a preselected communication channel spacing, communication channel output sample rate, and number of communication channels.

10. The channelizer of claim 9, wherein the input data rate is a front end analog to digital converter sample rate.

11. The channelizer of claim 9, wherein the preselected channel spacing is at least one of GSM and Interim Standard channel spacing.

12. The channelizer of claim 9, wherein the channel output sample rate is an integer multiple of a symbol rate of a communication signal.

13. The channelizer of claim 12, wherein the integer multiple is at least two.

14. The channelizer of claim 9, further comprising a polyphase filter coupled between the resampling filter and the DFT circuit.

15. The channelizer of claim 9, wherein the DFT circuit is an  $n$ -point DFT circuit with  $(n-m)$  point overlap, where  $m$  and  $n$  are integers with  $m < n$ .

16. The channelizer of claim 9, wherein the DFT circuit is an  $n$ -point DFT circuit with  $(n-m)$  point overlap, where  $m$  and  $n$  are integers with  $m < n$ , and further comprising an  $n/m$  oversampling polyphase filter coupled between the resampling filter and the DFT circuit.

17. The channelizer of claim 9, further comprising a recovered channel output selection circuit coupled to the individual recovered channel outputs for passing a subset of recovered channel signals onto subsequent processing.

18. The channelizer of claim 16, wherein  $n=130$  and  $n=48$ , and the output data rate is 26 Msps.

19. A method for recovering individual communication channels from a received signal, the method comprising:

receiving a transmitted signal spanning multiple communication channels;

digitizing the transmitted signal to form a digitized input signal;

resampling the digitized input signal from an input data rate to an output data rate to provide a resampled signal; and

performing an n-point discrete Fourier transform (DFT) on the resampled signal to recover individual communication channels,

wherein the second data rate is commensurate with a preselected communication channel spacing, communication channel output sample rate, and number of communication channels.

20. The method of claim 19, further comprising selecting a subset of the individual communication channels for subsequent processing.

21. The method of claim 19, wherein performing comprises performing an (n-m) point overlapped DFT.

22. The method of claim 19, further comprising polyphase filtering the resampled signal to form a polyphase filtered resampled signal, and wherein performing comprises performing a DFT on the polyphase filtered resampled signal.

23. The method of claim 22, wherein polyphase filtering comprises polyphase filtering with an oversampling ratio of  $n/m$ , and wherein performing further comprises performing an  $(n-m)$  point overlapped DFT.

24. The method of claim 19, wherein receiving comprises receiving transmitted signals spanning multiple GSM communication channels.

25. The method of claim 19, wherein receiving comprises receiving transmitted signals spanning multiple Interim Standard communication channels.